DISCUSSION PAPERS IN ECONOMICS

Working Paper No. 08-02

Gender, Educational Attainment, and the Impact of Parental Migration on Children Left Behind

Francisca M. Antman

University of Colorado

updated June 2008, February 2010
June 2007

Center for Economic Analysis
Department of Economics

University of Colorado at Boulder
Boulder, Colorado 80309

Gender, Educational Attainment, and the Impact of Parental Migration on Children Left Behind

Francisca M. Antman[y]
Department of Economics,

February 5, 2010

Abstract

Estimation of the causal e¤ect of parental migration on child education is complicated by the likelihood that factors in‡uencing parental migration also a¤ect child educational attainment. This paper exploits variation in siblings' ages at the time of parental migration to get around this endogeneity problem, arguing that parental migration after a child is 20 should have no direct e¤ect on a child's educational attainment. The results point to a positive e¤ect of paternal migration on education, but the results are gender-speci…c, suggesting that pushing a father's U.S. migration earlier in his daughter's life can lead to an increase in her educational attainment of up to 1 year relative to delaying migration until after she has turned 20. In contrast, paternal domestic migration has no signi…cant e¤ect on educational investments, suggesting that father absence does not play a major role in determining children's educational outcomes. Instead, these results suggest that the marginal dollars from remittances relax the household budget constraint and enable families to invest in girls' education.

1 Introduction

While the public debate over immigration in the United States still mostly focuses on families wishing to settle permanently in this country, studies show that about half of undocumented Mexican migrants to the U.S. return to Mexico within two years (Reyes, 1997). In addition, data on Mexican migrants to the U.S. reveal that a large majority of men with families in Mexico leave at least one minor child at home.[1]

the family, so that intrahousehold allocations are largely determined by remaining family members, such as mothers, instead. If these decision makers care more about educational investments, child educational attainment may rise as a result.

Given this theoretical ambiguity, the e¤ect of a father's migration on the educational outcomes of children in Mexico remains an empirical question. Estimation of this e¤ect, however, is complicated by the likelihood that factors in‡uencing parental migration also a¤ect child educational attainment. For instance, any positive or negative selection as well as any household-level shock might have induced the parent to migrate and also may have spurred the children to drop out or remain in school.

The main empirical attempts to deal with this endogeneity problem have relied on instrumental variables (IV) for identi…cation. Hanson and Woodru¤ (2003) instrument for whether a household has an external migrant with the interaction between household-level characteristics and historical migration rates at the state level. They …nd that 10-15 year-old children in migrant households complete signi…cantly more schooling than their peers in non-migrant households. Using a similar identi…cation strategy, McKenzie and Rapoport (2006) …nd that migration lowers schooling for 16-18 year-old boys and argue that migration may impart a disincentive e¤ect on children in the household. As is often the case with instrumental variables methods, the exclusion restriction leaves these estimates open to criticism. For instance, historical migration rates might be indicators of the level of the development of the community and therefore the prevalence and quality of schools in the area which a¤ect children's educational attainments directly. More importantly, if historical migration rates are proxies for networks that lower the costs of migration, then assuming children base schooling choices on future returns in the U.S. and Mexican labor markets,

a subset of children within the family and also a¤ect paternal migration. A related pitfall of this approach is that family level …xed e¤ects will not control for unobserved heterogeneity

the same time, a father's domestic migration experience does not play a signi…cant role in the educational outcomes of his children, suggesting that father absence is not a major factor in‡uencing these estimates. The highly gendered results are consistent with a story in which resource-constrained families use remittances to …nance their daughters' educations. Since paternal migration also coincides with a shift in household structure, it may be that women are left as the primary decision makers in the household when a father migrates and these

focused on the aftermath of divorce and family separation, and therefore primarily surrounds the consequences of the biological father's absence from the child's home, as well as the potential income shocks that may accompany this change.

For the most part, studies on the e¤ects of family structure on children …nd a negative impact of father absence on educational attainment, and di¤er mainly in the magnitude of their estimates and their means of identi…cation. Grogger and Ronan (1995) exploit variation within the family in the number of years children spend in the home and …nd that fatherlessness reduces educational attainment for whites and Hispanics. Similarly, Sandefur and Wells (1997) …nd that living outside a two-parent family and changes to family structure are all detrimental to children's education. Notably, studies by Ginther and Pollak (2004) and Lang and Zargosky (2001) …nd that controlling for additional family background variables signi…cantly weakens the estimated e¤ect of family structure on children's educational outcomes. While there is comparatively little written on the case of parental absence in Mexico speci…cally, Giorguli Saucedo (2006) …nds evidence that living with both parents delays labor force entry for Mexican children, suggesting these children have a greater opportunity to focus on schooling.

Santrock's (1972) work is especially relevant because he considers the timing of a parent's absence in the course of a child's life and the gender-speci…c e¤ects of father absence. In particular, he hypothesizes that children should be more negatively a¤ected by father absence if their fathers depart earlier in life (before age six) as opposed to later in life since older children are able to compensate for the father's absence with peer attachments. Additionally, he argues that boys should generally be more negatively in‡uenced by father absence than

girls. Thomas' (1994) review of the child development literature also suggests that paternal absence has a greater influence on boys than girls.

Of course, the permanence of family dissolution considered in the literature on father absence serves as one of the main distinctions between these studies and the case of parental migration considered here. In addition, the positive family income shock that may accompany a parent's absence due to U.S. migration will be felt simultaneously with the parental absence, potentially outweighing the negative effects of the latter. Nevertheless, the literature on father absence is an important jumping-off point for this study because it stresses the role of parental presence in the educational outcomes of children as well as the importance of considering the age of children during the parental absence.

3 Data Description

3.1 Data

The data used for this project come from the Mexican Migration Project (MMP118), a collaborative research project between Princeton University and the University of Guadalajara covering the years 1982-83 and 1987-2007.[4] The MMP is a publicly available data set containing information on the migration patterns and a wide variety of characteristics of households in Mexico. While these households are randomly selected within community, communities are not randomly selected, so the MMP is not intended to be representative of Mexico as a whole. In its earliest period, the MMP focused mostly on rural communities in Western Mexico, an area which was a major point of origin for U.S. migrants. Since then,

[4] Avaiable at http://mmp.opr.princeton.edu/.

the MMP has expanded to include a broad range of communities from rural areas as well as small cities and major metropolitan areas and now covers communities in states throughout Mexico. The communities are typically sampled in the months of December and January when temporary migrants are more likely to be home with their families in Mexico.

The MMP is of particular interest because of its rich migration and lifelong labor histories of the household head and his (her) spouse. For the purpose of investigating the importance of age of the child when the parent migrated, this is especially important because it can account for the timing of the migration trips taken by the head of household and his (her) spouse and therefore identify the ages of children when the migration was undertaken. The MMP is also quite useful in examining within-family e¤ects because, unlike other household data sets, information on all children of the household head is provided regardless of whether they currently coreside with the parents. While the information on U.S. migration for the head of household is extensive, the MMP only has limited information on the …rst and last migration trips of other members of the head's family, including the children of the head, so it is not possible to track the child's migration history.

One limitation of the survey is that it only identi…es the relationship between the head of household and other members of the family and household. Since the focus of this paper is on children of migrants, I restrict the sample to children of the heads of household. By far, most of the heads of household are men (around 80 percent), so most of the children are observed in the household of their father. For purposes of documenting both parents' migration experiences, I make the assumption that the spouse of the head of the household, if present, is also the parent of the children. This will mostly a¤ect whether mothers are correctly identi…ed, and, as will be shown below, the extent of mother's migration is very

limited in any case.

to 15 years of age.

3.2 Descriptive statistics

The sample of children who are at least 20 years-old at the time of the survey with no domestic or migration experience prior to age 20 amounts to 34,706 individual child observations from 9,006 families. Table 1 describes the overall sample. The average age of children in the sample is about 32 years-old and the average level of educational attainment is about 8 years (median of 6 years). Almost 90 percent of the sample report fewer than 14 years of completed schooling, justifying the assumption that most children are in fact …nished with their educations by 20 years of age. I divide the child's life into six periods when the parent may have migrated: before the child was born, when the child was 0-4 years-old, when the child was 5-9 years-old, when the child was 10-14 years-old, when the child was 15-19 years-old, and when the child was at least 20 years-old. The average number of periods when either the mother or father was absent is about 1.1. For this reason, this paper will focus on the e¤ect of the parent's …rst migration trip.[5]

3.2.1 Extent of migration in the sample

On the issue of parental migration, about 27 percent of children have fathers that migrated to the U.S. at some point, while around 3 percent have mothers that have done the same. About 18 percent have fathers who have migrated domestically, and about 6 percent have mothers

[5] Attempting to separate out the e¤ect of parental migration from the e¤ect of the parent's …rst migration yields qualitatively similar results to those presented here. Results from the more extended model are available on request.

who have migrated within Mexico. Conditional on having a father with U.S. migration

thus when it was unlikely to have any further impact on their educational outcomes. Most notably, a majority of parents who migrate at some point do so before the birth of a child. Nevertheless, it is also noteworthy that there is signi…cant variation in child age at the time of parental migration beyond birth, with about a third of the sample experiencing paternal migration between birth and 20 years of age. A much smaller fraction of fathers migrate for the …rst time after a child has turned 20, a fact that will certainly have an impact on the precision of some of the estimates below. It also calls into question whether the sample of parents who migrate after their children are twenty are representative of the population at large. For this reason, I relax this threshold in the robustness section below to consider a control group where it is assumed that parents who migrate after a child has turned 15 have no impact on the educational outcomes of their children.

Since the variation in ages of siblings at the time of their parent's migration is critical for this analysis, it is important to establish the extent of this variation in the sample before turning to the …xed-e¤ects estimation. Table 4 gives a sense of the number of families on which identi…cation relies. As documented in panel A, of the 238 families with at least one child 20 and older at the time of the parent's …rst migration, 136 also had at least one child who was below the cut-o¤. These families have close to 8 children on average, and the children below 20 will thus be members of the treatment group for whom parental migration a¤ects educational attainment. Panel B gives a more detailed sense of the variation which underlies identi…cation of the e¤ects of child age at departure by grouping children into 5 year age categories based on their ages at the time of the father's migration. Of the total 2,427 families in which fathers have some U.S. migration experience, 597 families have children in two, not necessarily adjoining, age groups at the time of the father's …rst U.S. migration,

while 241 families have children in 3 age groups at the time of the father's first U.S. trip.

4 Empirical Strategy

dummy variables indicating into which 10-year birth cohort the child was born. The birth cohort dummies address the concern that the di¤erence in ages between siblings is picking up the overall increases in educational attainment Mexico experienced over the course of the last century. The family ..xed e¤ect, $_f$, captures any observed or unobserved heterogeneity common to the siblings in family , including characteristics of the parents and community of origin, and $_{if}$ is assumed to be an i.i.d. disturbance term with zero mean.

Ideally, this identi..cation strategy would be able to not only establish whether the effects of parental migration on child education are positive or negative, but also illuminate

is a dummy variable indicating whether the father made his …rst migration trip to the U.S. in one of the following periods: before the child was born, when the child was between 0 and 4 years of age, when the child was between 5 and 9 years-old, when the child was between 10 and 14, when the child was between 15 and 19, and with the base group including those children whose fathers migrated sometime after they had turned 20. The remaining variables are as stated in the previous section.[7]

I estimate equations (1) and (2) allowing for the family …xed e¤ect to capture all observable and unobservable heterogeneity at the family level. This could include any family-level characteristics and shocks that a¤ect both parental migration patterns and children's education. Since $_f$ is likely to be correlated with the father's migration pattern, controlling for it presents a signi…cant step forward in estimating the e¤ects of parental migration patterns on education. The identifying assumption is that after including the family …xed e¤ect, there is no correlation between the remaining error term and the factors predicting parental migration. As noted above, this strategy will not control for time-varying sources of endogeneity. However, since the …xed e¤ects used here are at the family level, any endogenous shocks would have to be correlated with paternal migration while at the same time a¤ecting some children within the family and not others. Since birth order and cohort e¤ects are already controlled for in the model, I …nd this unlikely to be the case.

[7] An alternative model would include dummies for parental migration experience in addition to the dummies dsecribing when the parent …rst began migrating. The results of such a speci…cation are similar to those presented below.

5 Results

5.1 Overall effect of parental migration

I begin by estimating equation 1 to determine the effect of parental migration on child education by grouping children into categories based on whether their parents migrated before or after the child was beyond the age at which a parent's migration could have had an impact on the child's education, taken here to be 20 years of age. As shown in column (1) of Table 5, a father's migration to the U.S. before the child reaches this critical age is associated with an increase in educational attainment of 0.29 years of schooling, but the point estimate is not statistically significant. Interestingly, a father's migration within Mexico is associated with almost no difference in educational attainment relative to fathers with no migration experience. The point estimate of -0.05 is also not statistically significant.

As is common in the literature on parental absence and intrahousehold allocations, one might argue that boys' and girls' educational outcomes are determined differently even within families, and should thus be estimated separately. Columns (2) and (3) of Table 5 show the results of estimating equation 1 separately for boys and girls, respectively. While the effects of parental migration are again not statistically significant for boys, they are closer in magnitude, with the point estimate for a father's U.S. migration around 0.23 and the point estimate for a father's Mexican migration around 0.26. For girls, however, having a father migrate to the U.S. is associated with an increase of almost 0.71 years of schooling, a result which is significant at the 5 percent level. In contrast, having a father migrate within Mexico is associated with almost no increase in schooling for girls (point estimate of 0.08) and is not statistically significant. Thus, it seems that the main beneficiaries of

paternal U.S. migration are girls. It could also be argued that since domestic migration is not signi…cantly a¤ecting educational outcomes relative to staying at home, paternal absence alone is not conferring a signi…cantly detrimental e¤ect on girls.

5.2 E¤ects by child age

Table 6 shows the results from estimating the family …xed-e¤ects regression in equation 2. Column (1) shows that the e¤ects of the individual control variables on educational attainment are as expected. There is a statistically signi…cant negative e¤ect of being

for the …rst three age groups again suggests that, at least for young girls, the absence of a father does not mitigate the positive e¤ect of migration.

5.3 Robustness

found in Table 8. The point estimates are again very similar to the results when controlling for domestic migration, with the e¤ect of a father's …rst U.S. migration increasing child education by 0.63 years in the overall sample and 1.01 in the sample of girls. This suggests that however faulty the construction of domestic migration variables may have been, their inclusion does not signi…cantly alter the estimates from what would have prevailed using the approach of combining domestic migrants with non-migrants. To the extent that paternal domestic migration was simply capturing the e¤ect of father absence, this exercise thus adds to the perception that father absence is not a signi…cant determinant in child educational attainment.

Table 9 shows the results from another important robustness check to con…rm that the results are not purely coming from the arbitrary cut-o¤ of 20 years of age. As some might argue, in a country like Mexico, …fteen would be a more appropriate threshold for the assumed age beyond which parental migration should no longer a¤ect child education. Certainly, the fact that some children beyond the 15 year-old threshold are still getting their educations, either because they had to repeat grades or they went above and beyond the average years of schooling, means that there may be some "contamination" of the control group in this exercise. Although the magnitude of the coe¢ cient estimates drop and are no longer sta-

5.4 Discussion

Two points emerge from the results presented here: (1) parental domestic migration does not seem to have a signi..cant impact on the educational attainment of children and (2) parental U.S. migration matters for the educational attainment of girls and not boys. Both parental migration to the U.S. and domestic migration to another state within Mexico involve father absence. Yet, there is no statistically signi..cant di¤erence between the educational outcomes of siblings who experienced parental domestic migration and those who did not. This suggests that father absence, at least for children of migrants, is not playing a major role in their educational outcomes. The similarity of the point estimates for the e¤ects of paternal

But why should these remittances a¤ect educational investments in girls and not boys? Having already ruled out the likelihood that father absence is playing a signi…cant role in

before she is born, would lead to an increase in educational attainment by as much as one year relative to delaying migration until after she has turned 20. Under the assumption that children whose parents migrate after the child has turned 20 are akin a20p3(w)8n653(a)11(t)8(t)li511(e)9(

References

Antman, Francisca M. 2007. "Migration and the Mexican Family: Exploring the Consequences for Those Left Behind." Ph.D. diss. Stanford University. ProQuest: AAT 3267454.

Ashraf, Nava, Diego Aycinena, Claudia Martinez and Dean Yang. 2009. "Remittances and the Problem of Control: A Field Experiment Among Migrants from El Salvador." Un-

Hanson, Gordon H. and Christopher Woodru¤. 2003. "Emigration and Educational Attainment in Mexico." Mimeo. University of California, San Diego.

Lamb, Michael E. and Catherine S. Tamis-Lemonda. 2004. "The Role of the Father: An Introduction" in ed. Michael E. Lamb. Hoboken, N.J.: John Wiley & Sons, Inc.

Lang, Kevin and Jay L. Zagorsky. 2001. "Does Growing Up with a Parent Absent Really Hurt?" 36(2): 253-273.

McKenzie, David and Hillel Rapoport. 2006. "Can Migration Reduce Educational Attainments? Evidence from Mexico." World Bank Policy Research Working Paper No. 3952.

McKenzie, David and Hillel Rapoport. 2007. "Network E¤ects and the Dynamics of Migration and Inequality: Theory and Evidence from Mexico."

84(1): 1-24.

Mexican Migration Project MMP118, http://www.mmp.opr.princeton.edu.

"The Mexican Migration Project Weights" http://lamp.opr.princeton.edu/documents-weights-en.aspx

Reyes, Belinda I. 1997. "Dynamics of Immigration: Return to Western Mexico," Public Policy Institute of California.

Sandefur, Gary D. and Thomas Wells. 1997. "Using Siblings to Investigate the E¤ects of Family Structure on Educational Attainment." Institute for Research on Poverty Discussion Paper no. 1144-97.

Santrock, John W. 1972. "Relation of Type and Onset of Father Absence to Cognitive Development." 43(2): 455-469.

Thomas, Duncan. 1994. "Like Father, Like Son; Like Mother, Like Daughter: Parental Resources and Child Height." , 29(4): 950-988.

Winship, Christopher and Larry Radbill. 1994. "Sampling Weights and Regression Analysis." 23(2): 230-257.

Zoller Booth, Margaret. 1995. "Children of Migrant Fathers: The E¤ects of Father Absence on Swazi Children's Preparedness for School." 39(2): p.195-210.

Table 2: Comparison of U.S. and Mexican Migrant Wages (Male Household Heads)

	Mean	Std. Dev.	25%	75%	N
Daily Earnings During Last Domestic Migration	17.21	422.15	0.01	10.95	2837
Daily Earnings During Last Mexican Job (1)	19.00	27.89	8.25	21.16	4602
Daily Earnings During Last US Migration (2)	85.45	2167.66	24.38	58.03	3503
Daily Earnings During Last US Migration (3)	60.15	174.99	25.40	69.19	3756
Average Monthly Remittances During Last US Migration	280.69	512.90	26.42	364.17	4607
Hourly Wage	6.55	16.21	3.10	7.25	3814
Usual Hours Worked Per Week	46.38	15.17	40	54	4906
Months Worked Per Year	7.39	3.79	4	12	5066

Notes:
All values in 2002 US dollars
(1) Only for communities 53-118
(2) Based on 40 hours per week, 50 wks/yr
(3) Based on US hours data, 5 days per week

Table 3: How Many Children Experience Paternal Migration?
Distinguished by child's age during father's absence

How many children first experienced paternal migration during the specified period?

	Observations	Percent	Observations	Percent
Before Child's Birth	5682	60.15%	3629	59.13%
Child 0-4 Years-old	1255	13.29%	764	12.45%
Child 5-9 Years-old	853	9.03%	527	8.59%
Child 10-14 Years-old	595	6.30%		

Table 4: Variation in Child Age at Father's 1st US Departure

Panel A: How many families have children above and below the 20 year-old cutoff?

Families with at least one child 20+ when father first migrated to US	238
Those with at least one child under 20	136
Those with no children under 20	102

Panel B: How much within-family variation is there in age at father's 1st US migration?

Number of age groups[1] children fall into	Number of families
1	1499
2	597
3	241
4	68
5	19
6	3
Families with fathers who have some US migration experience	2427

[1]Children within the family are grouped into the following age categories based on their ages at the time of the father's first U.S. migration: Before birth, 0-4, 5-9, 10-14, 15-19,

Table 6: The Effect of Child Age During Parental Migration on Educational Attainment

	(1) Boys & Girls Education (Yrs)	(2) Boys Education (Yrs)	(3) Girls Education (Yrs)
Before Child Born	0.646	0.772	0.987
	[0.301]**	[0.549]	[0.428]**
Child 0-4 Years-old	0.364	0.008	1.042
	[0.287]	[0.521]	[0.405]**
Child 5-9 Years-old	0.216	-0.219	0.986
	[0.266]	[0.485]	[0.386]**
Child 10-14 Years-old	0.381	0.428	0.664
	[0.246]	[0.440]	[0.364]*
Child 15-19 Years-old	0.289	0.277	0.609
	[0.216]	[0.401]	[0.287]**
Before Child Born	-0.173	0.145	0.369
	[0.353]	[0.661]	[0.536]
Child 0-4 Years-old	0.074	0.268	0.629
	[0.345]	[0.655]	[0.512]
Child 5-9 Years-old	0.114	0.389	0.566
	[0.319]	[0.621]	[0.478]
Child 10-14 Years-old	-0.047	0.135	0.181
	[0.307]	[0.622]	[0.450]
Child 15-19 Years-old	-0.108	0.232	-0.087
	[0.257]	[0.525]	[0.371]
Birth order	0.182	0.147	0.192
	[0.013]***	[0.023]***	[0.020]***
Oldest	0.391	0.439	0.276
	[0.044]***	[0.082]***	[0.068]***
Youngest	0.042	-0.081	0.095
	[0.059]	[0.109]	[0.090]
Female	-0.226		
	[0.033]***		
Family Fixed Effects	YES	YES	YES

Table 7: The Effect of Parental Migration on Child Education with Combined Base Group

Base group includes children whose parents had domestic migration experience and those whose parents had no migration experience

	(1)	(2)	(3)
	Boys & Girls Education (Yrs)	Boys Education (Yrs)	Girls Education (Yrs)
Father Migrated to US Before Child Was 20	0.286	0.226	0.709
	[0.209]	[0.380]	[0.294]**
Birth Order	0.184	0.155	0.193
	[0.013]***	[0.023]***	[0.020]***
Oldest	0.389	0.434	0.276
	[0.043]***	[0.082]***	[0.067]***
Youngest	0.04	-0.083	0.091
	[0.059]	[0.110]	[0.090]
Female	-0.227		
	[0.033]***		
Family Fixed Effects	YES	YES	YES
10-Year Birth Cohort Dummies	YES	YES	YES
Observations	34706	16427	18279
Number of families	9006	7170	7533

Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%

Table 9: The Effect of Parental Migration on Education; 15 Year-old Cutoff

Assuming children who experience paternal migration before age 15 make up the treatment group
Base group includes children whose parents had domestic migration experience and those whose parents had no migration experience

	(1)	(2)	(3)
	Boys & Girls Education (Yrs)	Boys Education (Yrs)	Girls Education (Yrs)
Father Migrated to US Before Child Was 15	0.11	0.029	0.375
	[0.169]	[0.324]	[0.255]
Birth Order	0.185	0.155	0.194
	[0.013]***	[0.023]***	[0.020]***
Oldest	0.388	0.433	0.275
	[0.043]***	[0.082]***	[0.067]***
Youngest	0.04	-0.084	0.093
	[0.059]	[0.110]	[0.090]
Female	-0.227		
	[0.033]***		
Family Fixed Effects	YES	YES	YES
10-Year Birth Cohort Dummies	YES	YES	YES
Observations	34706	16427	18279
Number of families	9006	7170	7533

Robust standard errors in brackets * significant at 10%; ** significant at 5%; *** significant at 1%